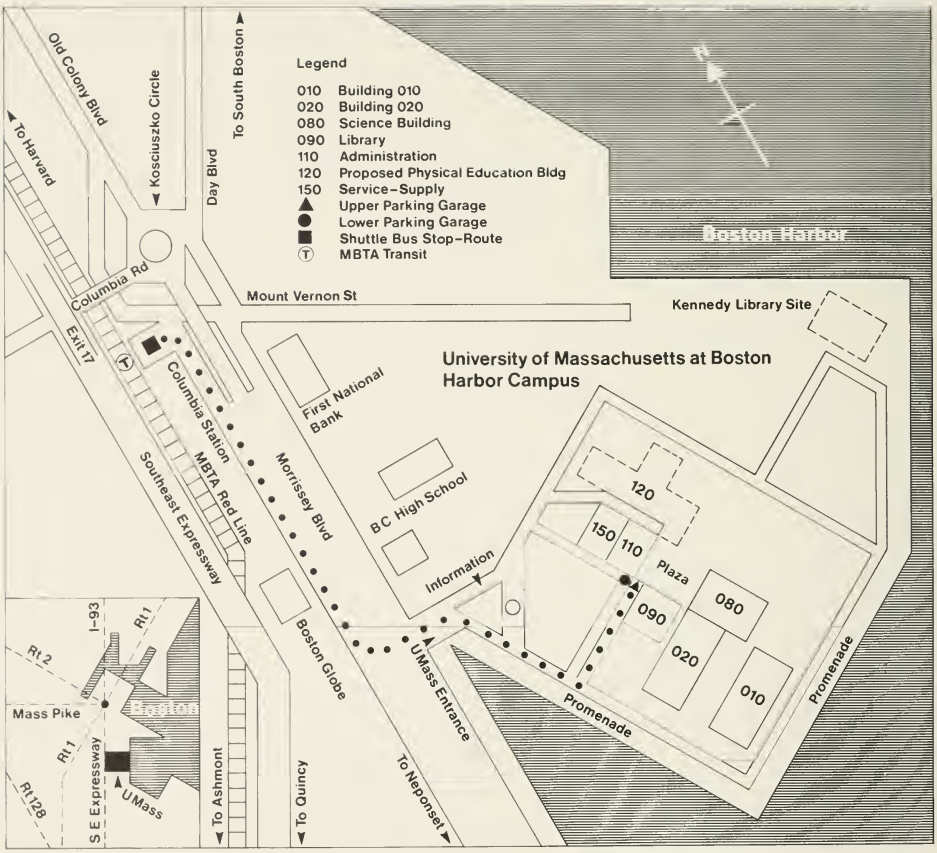
Graduate Bulletin 1978-1979

University of Massachusetts at Boston

Directions



UMass/Boston is only 3 miles from downtown Boston and easily accessible by public or private transportation.

From North or West
Take Southeast Expressway and leave at Exit 17, turn left onto Columbia Road, enter rotary and take first right down ramp to Morrissey Boulevard, bear right of island following UMass - Boston sign, at first traffic lights, turn left into campus.

From South
Take Southeast Expressway and leave at Exit 18 - Morrissey Boulevard UMass (Near Boston Gas tanks).

Public Transportation
Take MBTA Red Line to Columbia Station. University shuttle bus service picks up passengers at the T parking lot.

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Nondiscrimination and Affirmative Action Policy
UMB does not discriminate against students, faculty, staff, or applicants for employment because of sex, ethnic background, race, age, religion, or handicapped status. UMB is also fully cognizant of its responsibilities under Title IX of the Higher Education Amendments of 1972, of Titles VI and VII of the Civil Rights Act, of 503 and 504 of the Rehabilitation Act of 1973, and the Equal Pay Act.

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Academic Calendar
1978 - 1979

First Semester		
September 4	Monday	Labor Day
September 5	Tuesday	Add/Drop Period
September 6	Wednesday	Classes Begin
September 12	Tuesday	End of Add/Drop
October 9	Monday	Columbus Day (Holiday)
October 20	Friday	Mid Semester
October 20	Friday	Pass/Fail Deadline
November 3	Friday	Course Withdrawal Deadline
November 11	Saturday	Veteran's Day (Holiday)
November 20-Dec. 1	Monday-Friday	Advance Registration
November 23-26	Thursday-Sunday	Thanksgiving Recess
November 27	Monday	Classes Resume
December 8	Friday	Classes End
December 9-13	Sat.-Wed.	Reading Period
December 14-21	Thursday-Thursday	Final Exam Period
December 22	Friday	Snow Make-Up
Second Semester		
January 19	Friday	Special Add/Drop
January 22	Monday	Classes Begin
January 26	Friday	Add/Drop End
February 19	Monday	Washington's Birthday (Holiday)
March 9	Friday	Mid Semester
March 9	Friday	Pass/Fail Deadline
March 10-18	Saturday-Sunday	Spring Vacation
March 19	Monday	Classes Resume
March 23	Friday	Course Withdrawal Deadline
April 16	Monday	Patriot's Day
April 17-27	Tuesday-Friday	Advance Registration
May 1	Tuesday	Classes End
May 2-9	Tuesday-Tuesday	Reading Period
May 10-17	Wed.-Wed.	Final Exam Period
May 31	Thursday	Commencement

Tuesday, February 20th is Monday's Schedule

Foreword

The University of Massachusetts at Boston was founded in 1965 to provide the people of the Commonwealth and particularly of Greater Boston the opportunity for a superior education at moderate cost. Since its founding, the University has demonstrated a commitment to serve its students — to satisfy their special needs and varied interests — and its community. As part of this commitment, the University offers postgraduate studies at the Master's level in Biology, Chemistry, English, History and Mathematics. More programs — some will have a multidisciplinary focus — are being prepared.

The Harbor Campus is a six-building complex housing the College of Arts and Sciences, the central library, the science center, the administration and service buildings. A recreation-sports center and a multipurpose academic and student activities building are planned. The John F. Kennedy Memorial Library, an invaluable resource facility and major public attraction, is being built at the harbor's edge, abutting the University. Recently, the Harbor Campus has been mentioned as the most appropriate site for the relocation of the Archives of the Commonwealth of Massachusetts. These Archives, together with the Kennedy Library, would give the University access to unparalleled educational resources.

The Harbor Campus is easily accessible to the entire Greater Boston area. Free shuttle bus service runs frequently between the Campus and the Columbia MBTA station, and free shuttle bus service also operates between the Harbor and Downtown Campuses. Underground parking is available at a reasonable charge at the main campus.

Set in the resonant history of Boston and New England, the Univercity has gathered a distinguished faculty to create an intellectually challenging context in which to pursue graduate education.

Admission

All graduates of approved colleges, universities, or institutions who hold the B.A. or B.S. or other bachelor's degrees are eligible to apply for admission to the Graduate Program. Admission is only for the semester requested and cannot be guaranteed for a later date. Application forms can be obtained by writing to the Director of Graduate Studies, University of Massachusetts at Boston, Harbor Campus, Boston, MA 02125. Application for admission, with supporting documents, should be sent in duplicate to the Office of the Director of Graduate Studies. The application and the accompanying documents must be received by April 15 for September enrollment, and November 15 for the January enrollment. Applications received after these dates can be considered only on a space available basis.

Admission to Graduate Studies does not automatically indicate candidacy for an advanced degree. Such candidacy is subject to specific requirements as defined by the individual departments. Students must secure the approval of the chairperson of the department in which they desire to major before they can become a candidate for a degree in that subject.

Applicants can be admitted to Graduate Studies in one of the two following categories:

Degree Status: a student admitted as fully qualified to undertake a program toward a graduate degree.

Special Student: any student who is not admitted to a graduate program who is allowed to enroll in courses.

General Admission Requirements

1. A minimum cumulative grade point average of 2.75.

2. A bachelor's degree or the equivalent from any college or university of recognized standing.

3. Two official transcripts of all previous college work (graduate and undergraduate).
An applicant should request the registrar of all colleges previously attended to send two copies of the transcript directly to the office of the Director of Graduate Studies. A final transcript showing that the bachelor's degree has been awarded must be received before the applicant can enter Graduate Studies.

4. Two letters of recommendation from persons in the field of the applicant's academic major at the institution most recently attended. Applicants whose academic record goes back farther than five years may substitute other references, subject to departmental acceptance.

5. The Graduate Record Examination (both Aptitude and Advanced Tests) are not required in all departments but the scores should be submitted if available. Biology and Chemistry Departments require appropriate GRE exams. Addresses of the Graduate Record Exam test centers are available from the Educational Testing Service, 20 Nassau St., Princeton, New Jersey 08540.

6. For foreign student requirements, see section entitled Foreign Applicants.

7. The applicant must be accepted by both the department(s) and the Director of Graduate Studies.

Foreign Applicants

The test of English as a Foreign Language (TOEFL) is required of all applicants for admission to Graduate Studies from countries whose native language is not English. Information about the examination may be obtained by writing:

Test of English as a Foreign Language
Educational Testing Service
Princeton, New Jersey 08540

TOEFL may be waived if the applicant has attended an English speaking college or university for a period of at least two academic years. In all other cases a score of 550 or above is required. Students scoring between 500 and 549, who otherwise meet the requirements set by departments, may be admitted with special permission of the department in which they plan to major.

Readmission

A student or applicant who falls into one of these categories must reapply: 1. An applicant who has previously been admitted to the University but did not enroll on the entrance date stated in the acceptance letter;

2. A graduate student at this University who was accepted for one degree program and wishes to apply for another program or degree; and

3. A degree candidate who has not enrolled in courses or paid the program fee must reapply and pay all associated fees.

The financial requirements of the University, changing costs, state and legislative action, and other matters may require an adjustment of these charges and expenses. The University reserves the right to make adjustments to the estimated charges and expenses as may from time to time be necessary in the opinion of the Board of Trustees. The applicant acknowledges this reservation by the submission of an application for admission or by registration.

Entrance Expenses

Application Fee: Each application for admission to the University must be accompanied by a non-refundable application fee payment of $10.00 for qualified Massachusetts residents; $25.00 for non-Massachusetts residents. Checks should be made payable to the UNIVERSITY OF MASSACHUSETTS, BOSTON.

GM-Fees Half Rate

8 credits or less

Tuition — Out-of-State	$77.50 per credit
In-State	33.50 per credit
Activities	7.50
Health	12.00
Athletic	2.50
I.D.	1.00
Medical Insurance	58.00*
PIRG	2.00*

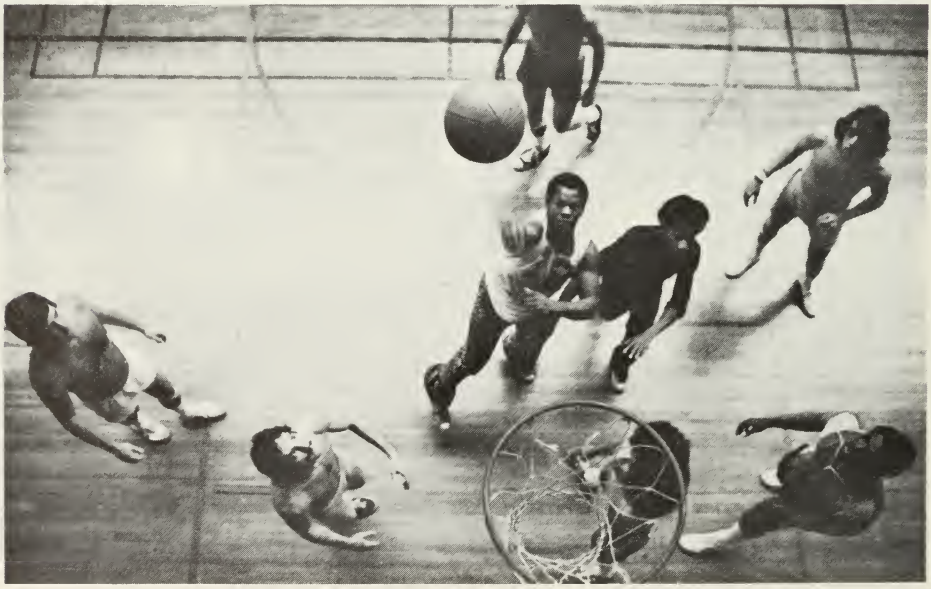
*Optional

GM-Fees Full Rate

9 credits or more

Tuition — Out-of-State	$77.50 per credit
In-State	33.50 per credit
Activities	15.00
Health	24.00
Athletic	5.00
I.D.	1.00
Medical Insurance	58.00*
PIRG	2.00*

*Optional



Explanation of Fees and Payments

In-State Tuition
As a state institution, the University of Massachusetts at Boston offers a low rate of tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is determined in accordance with the policy established by the Board of Trustees and detailed under the section titled "Residence Status".

Student Activities Fee
This is a mandatory fee set by the Board of Trustees. It is used to support programs and activities beneficial to students, such as the recognized student organizations and the University Cultural Events Committee.

Student Health Fee
This is a mandatory fee for all students set by the Board of Trustees used to support the University Health Services and its program.

Medical/Surgical Insurance
An optional plan providing health, medical, and surgical care on a twelve month basis for injuries or illness during the school year, holidays, and summer vacation. Students who register for the fall semester have only one opportunity to enter this program each year, at the time of payment of the fall semester bill. It is also offered on the spring semester bill for new spring registrants only. Dependents of married students are not covered under this plan. Coverage for dependents is available at additional cost.
Inquire at the University Health Services.

Commencement Fee
A commencement fee of $15.00 is assessed students in the fall semester of their commencement year, as commencement exercises and events are intended to be self-supporting.

Payment Due Dates
In accordance with University policy all charges for tuition and fees are due and payable approximately 21 days prior to the date of final registration for each semester. Bills will be rendered in advance with due date shown and should be returned with the proper payment to the Bursar's Office, University of Massachustees at Boston, Boston MA 02125.
Payment of bills is an integral part of registration. A student will not be fully registered until the bills are paid in full or otherwise accounted for. All tuition bills must be returned directly to the Bursar's Office for registration clearance by the due date on the bill. Delinquent accounts will be considered sufficient cause for cancellation of registration, as University regulations prohibit final registration, graduation, or granting credit for any student whose account with the University is delinquent.

Late Payment and Registration
Any student who does not make payment of his/her semester charges by the date specified will be required to pay a late payment fee of $25.00.

Tuition and Fee Refunds
A student who leaves the University for any reason, except as specified below, before a semester is completed will be granted a pro rata re-

fund of tuition and fees. Upon completion of a withdrawal form from the Dean's Office of his respective college, a student who makes an advance payment and then for any reason does not attend any part of the next semester or term at the University will be given a full refund of tuition and fees. The application fee, the $15.00 admission (matriculation) payment and the $15.00 orientation payment required of new students are not refundable. A student called into military service before completion of a semester will be given a pro rata refund of tuition and fees provided that he receives no academic credit for the work of that semester. If academic credit is given, there will be no refund. A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

Refund Schedule

Regular Term

Within the first two weeks from the beginning of semester or term 80%
During the third week 60%
During the fourth week 40%
During the fifth week 20%
After the fifth week ..... no refund

Refunds are based upon the withdrawal date established by the Registrar.

Financial Aid at the University of Massachusetts/Boston is awarded to those students who cannot provide the full cost of their education through their own and their families' reasonable efforts. The term "financial aid" is used to include scholarships, grants, long term loans and part-time employment.

The following types of aid are administered by the Financial Aid Office at UMass/Boston and awards are based primarily on "financial need".

National Direct Student Loan Program (NDSL)

The Higher Education Amendments of 1973 provide for establishment at institutions of higher education of National Direct Student Loan Funds for the purpose of making long-term, low-interest loans to qualified students in need of financial assistance to pursue a course of study on at least a half-time basis at such institutions.

College Work-Study Program (CWSP)

The purpose of the College Work-Study Program is to expand part-time employment opportunities for students, particularly those from low-income families, who are in need of the earnings from part-time employment in order to pursue a course of study at an eligible institution. Federal grants are made to eligible institutions to enable them to create job opportunities for their eligible students. The institution may arrange for the employment of its eligible students to work for the institution and/or to work in the public interest for a public non-profit organization.

Guaranteed Student Loan Program (Help Loan)
HELP Loans are offered through a student's home town bank or credit union. The program was designed to supplement existing financial resources. HELP Loans are available to both undergraduate and graduate students and range from $1000-$2500 per academic year. If the student meets the requirements for interest subsidy, the Federal Government will pay the interest while the student is enrolled and during the nine (9) month grace period. Subsidy eligibility is determined by the school and lender under Federal guidelines.

UMass/Boston Tuition Waiver
This program will be for those students eligible under State Law, who are not currently receiving or who are ineligible to receive sufficient grant/or scholarship assistance and who have already undertaken reasonable levels of self-help assistance (loans and employment earnings).

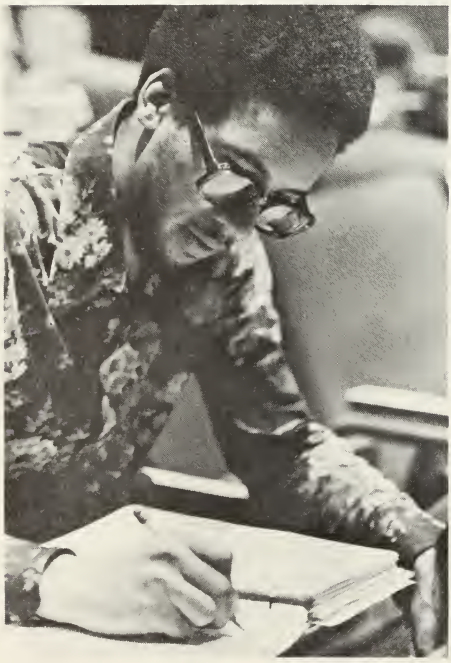
Applications and more information are available from the Financial Aid Office.

Waiver of Tuition for Full-Time Community College Faculty
The Trustees of the University of Massachusetts have authorized waiver of tuition but not fees for faculty members of the Massachusetts Regional Community Colleges taking courses at the University of Massachusetts, providing the faculty members have been serving full time before taking such courses and return to full time teaching in their Community College after completion of course work. When a faculty member who is eligible for such a tuition waiver desires to take a course at the University, his/her Community College President should write a memorandum certifying that he/she is a full time faculty member. Such waivers will apply for the period from September 1 to the following August 31. Such faculty members must be accepted for admission by the Graduate Program prior to any registration.

Graduate Assistantships: Teaching and Research
The University offers graduate assistantships in the instructional and research areas of those departments which sponsor graduate programs. Stipend amounts vary with the type of work and the amount of time required. Tuition waivers are granted only to assistants who receive stipends equal to at least half the current standard annual full time assistantship stipend and who are appointed for a period of at least one full semester. Certain fees are not waived. For further information contact the Office of Graduate Studies or the appropriate Graduate Program Director.

Summer School
Selected graduate courses are offered during the summer. The Summer School operates on a fee assisted, self-supporting basis; thus courses are offered only when sufficient student demand is demonstrated.

Veterans
Information concerning veterans' status and payments under federal and state law is available at the Office of Veterans' Affairs. Tuition may be waived for Vietnam Veterans whose service was credited to the Commonwealth.



Teacher Certification Program
Students seeking careers in education may avail themselves of the services of the Teacher Certification Program. The staff provides information and counseling to all students preparing for teaching careers. In addition, the program enables highly qualified students to satisfy Massachusetts requirements for Teacher Certification. Since UMass/Boston offers no major in Education, a teaching candidate pursues the University's normal degree and major sequences. At the same time, by judicious choice of electives from among those offered by several departments, one may acquire credits in courses approved for certification. The program culminates in the senior year when, under the direction of the faculty of the major department, the student enters student teaching and participates concurrently in a Curriculum and Methods Seminar.

Specific information concerning certification requirements and approved courses is available in the Teacher Certification Program Office.

These rules and regulations shall apply to the classifications of students at the University of Massachusetts as Massachusetts or non-Massachusetts students for tuition purposes. The residency form accompanies the application and classification is made at the time of admission. Those not qualified or wishing appeal see Section 7.

Section 1/Definitions

1. Academic Period — A term or semester in an academic year or a summer session, as prescribed by the Board of Trustees or under their authority.
2. Continuous Attendance — Enrollment at the University for the normal academic year in each calendar year, or the appropriate portion or portions of such academic year as prescribed by the Board of Trustees or under their authority.
3. Domicile — A person's true, fixed and permanent home and place of habitation, where he intends to remain permanently or for an indefinite time.
4. Emancipated Person — A person
   (a) who has attained the age of 18 years, or
   (b) if under 18 years of age, whose parents have entirely surrendered the right to the care, custody, and earnings, of such person and who no longer are under any legal obligation to support or maintain such person, or
   (c) a person who has no parent. If none of the aforesaid definitions apply, said person shall be deemed an "Unemanciapted Person".
5. His — Shall apply to the female as well as the male gender.
6. Parent — With respect to a person (in case of an adopted person, inserting the adjective "Adoptive" before the words "Father" and "Mother" wherever used):
   (a) The person's father;
   (b) If the person's father dies, either the legal guardian or if no legal guardian is appointed, the person's mother;
   (c) If neither the father nor mother is living and no legal guardian is appointed, the person who then stands "in loco parentis" to the person;
   (d) If the father and mother are divorced, the person to whom legal custody of the person is awarded;
   (e) If the father and mother are divorced, separated or unmarried and legal custody has not been awarded, the father or the mother as the case may be, with whom the person lives or, if he lives with neither and the father is living, the father.
7. Residence — A place of habitation.

Section 2/Rules of Determination of Domicile

1. Domicile is not acquired by mere physical presence in Massachusetts while the person is carrying on a course of study at the University or while the person is engaged in employment for a special term unless Massachusetts is otherwise the domicile of the person.

(2) Domicile at birth may be changed thereafter by action of the parent in the case of an unemancipated person or by action of the person himself in the case of an emancipated person.

(3) A person claiming Massachusetts as his domicile shall furnish evidence to support such claim. The burden of proof in all cases is upon the person making the claim. The following shall be of probative value, although not necessarily conclusive, in support of a claim of domicile within Massachusetts:

(a) Birth certificate
(b) Motor vehicle registration and/or operator's license
(c) Voting registration for voting
(d) Certified copies of federal and state income tax returns
(e) Property ownership
(f) Continuous physical presence in Massachusetts during periods when not enrolled as a student
(g) Permanent employment in a position not normally filled by a student
(h) Reliance on Massachusetts sources for financial support
(i) Former domicile in Massachusetts and maintenance of significant connections therein while absent
(j) Domicile of parent within Massachusetts

Evidence submitted in support of an assertion of domicile or of parental relationship shall be in such form as the Treasurer of the University or his designee may require. Copies of official records or documents shall be authenticated by a proper officer. Assertions of fact made other than by an authenticated copy of an official record shall be certified as to accuracy and completeness by the person submitting the same.

Section 3/Proof of Parental Relationship

A person asserting that he is an emancipated person shall furnish evidence to support such assertion. Such evidence may include:

(a) Birth certificate or any other legal document that shows place and date of birth
(b) Legal guardianship papers, court appointment and termination must be submitted
(c) Statement of the person, his parent(s), guardian(s), or others certifying no financial support
(d) Certified copies of federal and state income tax returns filed by the person and his parent(s)
(e) Where none of the foregoing can be provided, an affidavit of the emancipated person in explanation thereof and stating fully the grounds supporting the claim of emancipation

Section 4/Rules of Classification

(1) Every emancipated person applying for admission to the University who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of his application and has established a domicile in Massachusetts.

(2) Every unemancipated person applying for admission to the University, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the date of application and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.

(3) Every emancipated person seeking a change in classification who has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which he registers and has established a domicile in Massachusetts shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.
(4) Every unemancipated person seeking a change in classification, whose parent has maintained a residence in Massachusetts for a period of not less than one continuous calendar year next preceding the beginning date of the academic period for which he registers and has established a domicile in Massachusetts, shall be eligible for classification as a Massachusetts student for tuition purposes for such academic period.
(5) A person having his domicile elsewhere than in Massachusetts shall not be eligible for classification as a Massachusetts student for tuition purposes except as herein provided.
(6) Any person who is registered at the University as a Massachusetts student shall be eligible for continued classification as a Massachusetts student for tuition purposes (until attainment of the degree for which he is then enrolled) during continuous attendance at such institution.
(7) A member of the armed forces of the United States and his spouse and unemancipated children shall, while he is on active duty and stationed in the Commonwealth of Massachusetts, be eligible for classification as Massachusetts student for tuition purposes.

Section 5/Change in Classification
No application for change to classification as a Massachusetts student for tuition purposes submitted later than the first day of classes shall affect a classification during the then current academic period.

Section 6/Penalty for Misrepresentations
Misrepresentation in or omission from any evidence submitted of any fact which if correctly or completely stated would be grounds to deny classification as a Massachusetts student for tuition purposes shall be cause for exclusion or expulsion from or other disiplinary action by the University.

Section 7/Appeals
Appeal from a determination denying classification as a Massachusetts student shall be initiated by filing a tuition classification appeal form with the treasurer of the University at the Amherst Campus.

Section 8/Miscellaneous
Nothing contained herein shall be construed as limiting or prohibiting the authority of the Board of Trustees to waive or reduce tuition charges.

Bookstore
Located in the Administration Building, the bookstore carries all textbooks required for courses plus a complete line of art and school supplies, and gift items. It also carries a selection of paperbacks. Special orders can be made for almost any other book in print. The bookstore pays cash for used books every Thursday.

Housing and Transportation
The Housing/Transportation office is located on the third floor in the Administration Building. The HTO functions as the campus resource center for matters related to Housing and Transportation. The staff is prepared to provide the following services for University students, faculty and staff:

Transportation
- Directions to campus by public transit
- Directions to campus by automobile
- Parking procedures and regulations
- Shuttle bus schedule
- MBTA bus schedule
- Car pooling services/information

Housing
- Apartments, houses for rent or sale
- Apartments needed
- Room-mates needed
- Tenant's rights information
- Lease Terminology information

Library
The University Library holds a book collection numbering approximately 250,000 volumes, and currently receives more than 2700 domestic and foreign journals and newspapers. It also has a growing collection of government documents, and a fine art and music library with listening carrels. A Science Library is located on two floors within the Science Building, and contains the collections in Biology, Chemistry, Mathematics and Physics. There is also a small, specifically designed collection for the students and faculty of CPCS in the library on the mezzanine at 100 Arlington St.

The main library is centrally located on the plaza and easily accessible from the bridge which connects all the buildings on campus. Its physical arrangements include comfortable study environments of several descriptions: carrels, tables, and a few small rooms in which a group of students may study together. Its public catalogue holds a record of every book in all the University libraries. The resources of the three libraries work together to support the teaching programs of the University at every level.

Center for Media Development
UMB's Center for Media Development provides a full range of audio-visual equipment and consultation for instructional and other University-related purposes. This equipment is located in each of the colleges in areas designated as Media Labs. The college media labs are designed to provide "hands on" access to display and mini-production audio, video, and mixed media equipment on a Univer-

sity-wide scheduled basis. In addition, adjoining college language laboratories are available for use in conjunction with foreign language courses. The tapes used in laboratory sessions are closely correlated with classroom studies and many are produced within the University Media Center.

The UMB Media Center, located in the University library, is a sophisticated media production facility. The Center is equipped with a computer-assisted video editing system, a multitrack audio studio, and associated graphic production space. The Media Center is designed to produce high quality software for use within the University and outside educational and community distribution. In addition, the Media Center in collaboration with individual academic departments and activity centers offers media-related courses and workshops through its staff and other production resources.

Athletics and Recreation

The Athletics and Recreation Program is presently primarily intramural, although construction of the new Physical Education Building on campus will make possible previously unoffered varsity sports. Until the structure is completed, all athletic facilities are housed in buildings 010 and 020 at the Harbor Campus. Building 010 contains a swimming pool, four handball courts, a weight room and an exercise room. The gymnasium, two handball and two squash courts, and a weight room are located in building 020.

The facilities are open to the students, faculty and staff during the week. Community use of the athletic facilities is permitted during specified evening and weekend hours. Schedules of usage are posted each semester. Outdoor facilities include two athletic fields which are marked for football, soccer, softball, volleyball, and horseshoes.

The University's sailing dock moors ten Mercury sailboats and eight rowing dories which are available for use during the spring, summer and fall. A swimming test is required of all who wish to participate in water sport activities. For sailing, a Helmsman Test is administered by the sailing instructor. Once the test is passed,the boats may be taken out whenever there is one available.

Campus Ministry

The Campus Ministry is an interfaith Chaplaincy Service actively involved in the spiritual and human development of students, faculty and staff. Catholic, Protestant, Jewish and Orthodox Chaplains are available to all.

The Chaplaincy Office is a relaxing place to meet other students, share hospitality, and become aware of the liturgical, educational, and spiritual programs offered by the ministry. The Pastoral Counseling and Educational Office may be used for a private consultation with any member of the chaplaincy staff or for participation in any of the on-going groups operating out of the Campus Ministry. Such groups include Bread for the World, a Hunger Study and Action Group, Bible Study and Fellowship, Faith and Values Sharing Group, Parent Group Education, Scriptural Seminars, and a Christ on Campus Prayer Group.

Disabled Student Center

The Resource and Counseling Center for Handicapped Students provides academic and personal counseling to individual students, as well as peer counseling training. Reader and tutorial services are also offered.

The physical resources of the Center include a tape library, a Braille library, typewriters, and Braille equipment. The Center aims to meet the needs of any student who requests its services.

Information Services

INFO is the one-stop communications network and information center at the Harbor Campus. Committed to gathering and disseminating information throughout the University community, INFO provides a multitude of communications related services.

For prospective students and the general public, tours of the University may be booked through the INFO Office. Once enrolled, a student's Orientation program is planned and implemented through INFO. An INFO Booth is maintained on campus, where events are registered for University-wide publicity, lost and found articles may be turned in or claimed, pertinent printed materials are available, and information on day-to-day activities may be obtained.

INFO's scope of responsibility includes the annual University Commencement and various other Special Events. Services are extend beyond UMass/Boston to the urban community; programs such as the College Orientation Program for the Boston Public High Schools are sponsored by INFO.

The INFO Center is a member of the Media Caucus, a University-wide association of all communications-related departments. INFO's primary objective is to keep students, faculty and staff well informed of the policies, procedures, and programs of the University.

Job Placement Services
The University Placement Service is a central resource center for undergraduates, graduates, and alumni regarding all aspects of job placement and employment opportunities. This includes part-time employment, summer jobs, and internship programs. The Placement Office schedules workshops and seminars, publishes placement bulletins, and presents current job information news in the Mass Media. On-campus recruitment programs generate active interest for job opportunities.

An informational Resource Library is available, containing information on careers in the public and private sectors, as well as graduate study and careers in higher education. Students are encouraged to visit the Office anytime during their education.

The Placement Office maintains letters of recommendation and resumes on file for UMB alumni to be called upon by the graduate for employment references. It is important that such information be accurate and up-to-date. Contact the Office directly concerning your particular file.

Student Activities
The extra-curricular life of the campus centers around activities sponsored primarily through the student Activities Trust Fund (SATF). Established by the University Board of Trustees, the fund is comprised of a mandatory student activities fee of $15/semester and $5/summer school session, payable at course registration. The quarter of a million dollar trust fund is administered by a professional Student Activities staff upon recommendations from an elected student committee.

The University Student Activities Committee (SAC) is a committee of the University Assembly and is composed of 24 students elected annually by the student body as either collegiate or at-large representatives. The SAC is governed internally by a Chairperson, Secretary and Treasurer, elected to their posts by the committee itself. The SAC also has four standing subcommittees, each made up of six of the 24 members. These subcommittees include Community Action, Media and Publications, Cultural Events and Recognized Student Organizations (RSO's). The entire committee holds the responsibility for overseeing, coordinating, and allocating funds for student activities on and off campus.

The following is a list of the student organizations operating out of the Student Activities area. For further information, contact the Student Activities Office directly.

Recognized Student Organizations

African Student Union
Alpha/Omega Athletic Union
Anthropology Club
Arabic Student Union
Armenian Club
Art Club
Art Gallery
Asian American Association
Badminton Club
Boston High Alumni
Biology Club
Chemistry Club
Christian Fellowship
Chess Club
Club Y
Disabled Student Organization
Drama Company
Economics Society
E.R.A. Committee
Food and Nutrition Group
Gay People's Group
German Club
Graphic Arts Organization
Hellenic Club
Hillel
Housing Club
Imani
International Society
Irish Historical Society
Italian Club
Journalism Society
Karate Club
Latin American Students' Organization
Management Society
Math Club
Music Club
National Student Coalition Against Racism
Objectivists
Older Students' Organization
Parents' Support Organization
Photography Club
Physics Club
Politics Society
Polish Club
Portuguese Center
Prison Reform Organization
Puerto Rican Student Union
Returning Women Students Organization
Revolutionary Student Brigade
Rifle and Pistol Club
Russian Club
Sailing Club
Ski and Outing Club
Skin and Scuba Club
Social Sciences and Humanities Collective
Society for the Advancement of Management
Spanish Club
Student Veterans' Union
Table Tennis Club
Tennis Club
Ujima
UMB Athletic Union
Weight Lifting Club
Women's Center
World Affairs Society
Young Socialists' Alliance

Administration Building

Admissions; Advising; Athletics; Bookstore; Bursar; Alumni Association; Financial Aid; Univ. Gavernance; Health Services; Housing & Trans.; Registrar; Special Admissions; VET Program; Vocational Counselling Placement; Cafeteria: Hrs. 7am-10pm

Science Building

ACTION; Afro-American Studies; Student Activities; Women's Studies Program; Women & Career Options; Computer Facility; Mass Media; Institute far Learning and Teaching.

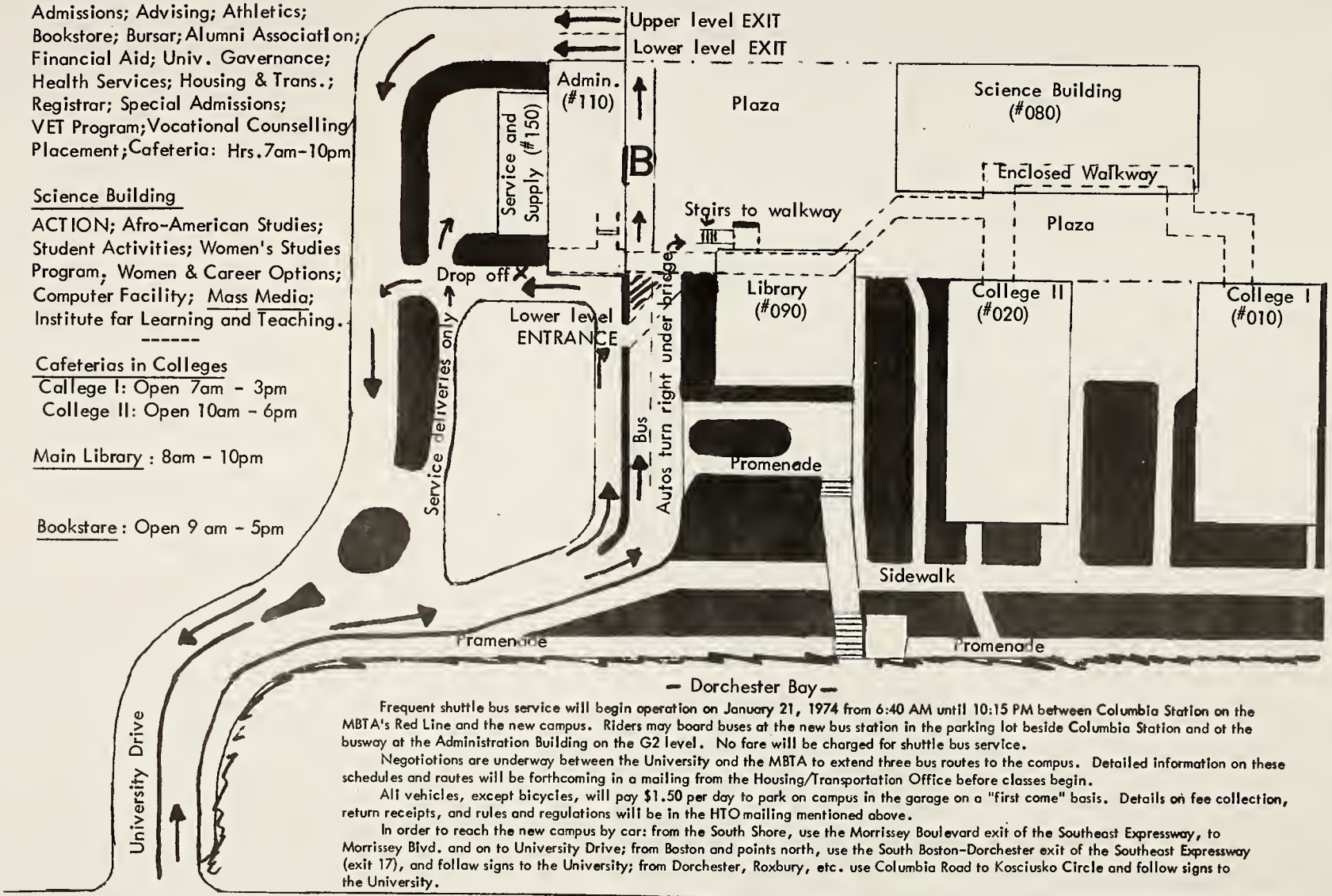
Cafeterias in Colleges

College I: Open 7am - 3pm
College II: Open 10am - 6pm

Main Library : 8am - 10pm

Bookstare : Open 9 am - 5pm

Traffic Flow and Pedestrian Walkways



Frequent shuttle bus service will begin operation on January 21, 1974 from 6:40 AM until 10:15 PM between Columbia Station on the MBTA's Red Line and the new campus. Riders may board buses at the new bus station in the parking lot beside Columbia Station and ot the busway at the Administration Building on the G2 level. No fare will be charged for shuttle bus service.

Negotiotions are underway between the University ond the MBTA to extend three bus routes to the compus. Detailed information on these schedules and routes will be forthcoming in a mailing from the Housing/Transportation Office before classes begin.

All vehicles, except bicycles, will pay $1.50 per day to park on campus in the garage on a "first come" basis. Details on fee collection, return receipts, and rules and regulations will be in the HTO mailing mentioned above.

In order to reach the new campus by car: from the South Shore, use the Morrissey Boulevard exit of the Southeast Expressway, to Morrissey Blvd. and on to University Drive; from Boston and points north, use the South Boston-Dorchester exit of the Southeast Expressway (exit 17), and follow signs to the University; from Dorchester, Roxbury, etc. use Columbia Road to Kosciusko Circle and follow signs to the University.

Master's Degree Requirements

1. Thirty graduate credits. Up to six credits of grade B or better may be transferred from other institutions with the consent of the department. Twenty-one of the 30 credits must be in the major field. Up to six credits may be counted from undergraduate work with the consent of the department.
2. The thesis and general examination are optional with the school or department, but if required, they shall be under the supervision of a committee recommended by the major department. The thesis committee will consist of members of the faculty at the discretion of the Chairperson of the department, and should be appointed as soon as possible after the student's first graduate registration. As soon as the student arrives on campus, and prior to the appointment of a thesis committee, an advisor, or guidance committee should be appointed for the student from the members of the faculty. Once the student has selected his thesis topic, the guidance committee may serve as the thesis committee, although these two committees are not necessarily the same.

The thesis must be approved by the thesis committee, the department chairperson, the advisor, and those members of the faculty in the major department designated by the department Chairperson to approve the thesis. The general examination (not limited to the thesis) is conducted by an examining committee of at least three members of the faculty. The recommendation of a majority of the members of the examining committee shall be requisite to receiving the degree. If a student offers a thesis, problem courses shall be limited to six credits.
3. All foreign language requirements for the Master's Degree are optional with the department.
4. Course credits used by any student for fulfilling the requirements for a Master's Degree may not be used by the student for fulfilling the requirements for any other Master's Degree at this University.
5. Students should consult program descriptions for further requirements.

Faculty

Kamaljit Bawa, Ph.D. Punjab University, *Plant Ecology,* Ruth Bennett, Ph.D. Tufts University, *Neurophysiology,* John Ebersole, Ph.D. U.C.L.A., *Marine Ecology,* John Freeberg, Ph.D. Harvard University, *Plant Morphogenesis,* William Hagar, Ph.D. Temple University, *Photosynthesis,* Bettina Harrison, Ph.D. Boston University, *Immunology and Ultrastructure,* Jeremy Hatch, Ph.D. Duke University, *Animal Behavior and Ecology,* Lawrence Kaplan, Ph.D. University of Chicago, *Archeological Botany,* Christine Kibel, Ph.D. University of London, University College, *Neurophysiology,* Herbert Lipke, Ph.D. University of Illinois, *Biochemistry,* David Policansky, Ph.D. University of Oregon, *Population Genetics,* Michael Rex, Ph.D. Harvard University, *Marine Ecology,* Walter Rosen, Ph.D. University of Wisconsin,*Plant Physiology,* Fuad Safwat, Ph.D. Washington University, *Plant Morphogenesis,* Ruth Schmitter, Ph.D. Harvard University, *Algal Biology,* John Schultz, Ph.D. Brown University, *Animal Development,* Edna Seaman, Ph.D University of Illinois, Urbana, *Molecular Genetics,* Harland Sheerin, Ph.D. University of Maine, *Animal Physiology,* Nevin Weaver, Ph.D. Texas A & M, *Biology of Insects,* Claire Van Ummersen, Ph.D. Tufts University, *Developmental Biology,* Richard White, Ph.D. Washington Univeristy, *Vision Physiology,* Garrison Wilkes, Ph.D. Harvard University, *Plant Genetics and Evolution.*

Admission Requirements

In addition to the University-wide requirements for admission, each applicant to the Graduate Program in Biology must submit a completed application form, three letters of recommendation, and scores of the Graduate Record Examination including one advanced test. An applicant is expected to have a grade point average of 3.0 in all undergraduate science and mathematics courses. The stated interests of a prospective student must coincide to an acceptable degree with faculty specialties represented in the department. The Biology Graduate Committee is responsible for reviewing applications and for recommending candidates to the Director of Graduate Studies.

The Program and Facilities

The Biology Program is designed to accommodate students of various backgrounds who wish rigorous training leading to the degree Master of Science in Biology.

Our modern facilities support programs in most phases of biology and include all of those normally found in laboratories in the biological sciences. There are research laboratories for faculty members and graduate students and teaching laboratories for graduate courses. Equipment, such as electron microscopes, amino acid analyzers, and controlled-temperature growth chambers, is available for graduate student use.

The Campus is located on Boston Harbor, and therefore one type of marine environment is readily accessible; in addition, arrangements

can be made for the use of the marine facilities on Nantucket Island and at Gloucester. Through cooperation of the Waltham Field Station of the University, we have facilities for large plantings of botanical materials. There are other institutions in the area with which we have informal arrangements so that some rather specialized facilities can be made available if they are needed.

Degree Requirements

Thirty credits are required for the Master's Degree. Each student will be assigned to a three-member advising committee which will consider the student's training and goals and , in consultation with the student, establish an appropriate program of study. The advising committee will be responsible for insuring that the candidate for a degree fulfills all requirements of the department and the graduate school. Students who choose to write a thesis will have a thesis advisor and must enroll in Biology 900 (Thesis Research). All other students are required to take Biology 901 (Projects in Biology). In addition, all students must take at least one semester of Biology 750 (Seminar in Biology) as partial fulfillment of Master's Degree requirements.

Graduate students may select courses at the 600 level or above, subject to the permission of the instructor. All 600 level courses are open to both advanced undergraduate and graduate students. One course may be selected from the course offerings in the Biology Department at the 300-500 level, subject to the approval of the student's advisor and of the departmental Graduate Committee. The student will be expected to perform extra work in such a course. One elective course may be selected from course offerings of other departments in the University at the 200 level or above, subject to approval by the student's advisor and the departmental Graduate Committee.

A student writing a thesis will be required to submit a thesis outline to the thesis committee for approval at least three months prior to the Master's oral examination. Once approved and signed by each committee member, a copy of the outline will be placed in the student's file. All Master's candidates must take a general oral examination which will not be limited to the thesis topic. The examination is conducted by a committee of at least three members of the Biology faculty.

The student must deposit the original copy of his/her thesis, plus one photocopy, with the University Library and pay the cost of binding. Another copy will be deposited with the Biology Department. Each graduate student will be required to submit a completed Certification of Eligibility for a Master's Degree form for the Department Chairman's signature prior to receiving the degree. The form should be filled out by the student.

Biol 602 Plant Physiology
Current developments in plant physiology, morphogenesis and bio-chemistry.
Prerequisite: Permission of instructor
Hrs. by Arrangement 3-5 credits

Biol 604 Biology of Cities
Aspects of the origin and development of cities relevant to human biology, food, air, water, energy, waste and flow of those resources into and out from cities.
Prerequisite: Introductory Biology
3 Lect-Disc Hrs. and additional field trips
3 credits

Biol 610 Ethnobotany
Review of studies on plane use by primitive societies in historic and prehistoric times. Ordinarily offered in conjunction with biology 613.
Prerequisite: Permission of instructor, Biology 105, 220 recommended
2 Seminar or Tutorial Hours 2 credits

Biol 612 Advanced Cell Biology
The analysis of gene transfer and expression at the cellular level, including the nature of metabolic systems and the factors governing their regulation.
Prerequisite: Permission of instructor.
Hrs. by Arrangement 3-5 credits

Biol 613 Archeological Botany
Laboratory tutorial recovery, identification and analysis of macroscopic remains, pollen and spores from archeological and geological deposits, interpretation of the data derived and their botanical, archeological and paleoecological applications.
Prerequisite: Permission of instructor, ordinarily Biology 610 will be required, number of credit hours will be determined by prior consultation with instructor.
3 Lab-Disc Hrs. Per Credit 2-5 credits

Biol 614 Advanced Cell Chemistry
The methodology of cell analysis, with emphasis on macromolecules and intermediary metabolites.
Prerequisite: Permission of instructor.
Hrs. by Arrangement 3-5 credits

Biol 618 Evolution Under Domestication
The origin, evolution and phylogenetic relationships of domesticated and semi-domesticated plants and animals: the influence of cropping and herding on natural floras and faunas of the world.
Prerequisite: Biology 241-242 or equivalent and permission of instructor.
3 Lect Hrs. and Saturday Field Trips 3 credits

Biol 622 Concepts and Methods in Cytology
The structural basis of cellular and subcellular functions, with practical experience in methods of visualizing cellular structure.
Prerequisite: Permission of instructor.
Hrs. by Arrangement 3-5 credits

Biol 624 Algal Physiology
Examination of current research areas in algal physiology, selected from such topics as algal nutrition, chromatic adaption, symbiotic relationships, control of planktonic sinking rates, secretion of specialized products (polysaccharide, carbonate, silica), and control of sexuality.
Prerequisite: Biology 211 and 324 or permission of instructor 2 Lects. Hrs, 1 Sem Hr. 3 credits

Biol 630 Natural History of Marine Invertebrates
A lecture and field course, devoted to the examination of convergent and divergent ecological, behavioral and morphological adaptations of marine organisms in different habitats. The course will draw heavily on the resources of Boston Harbor. The first half of the semester consists of lectures and demonstration laboratories; the second half includes weekly field trips. The first half of the course will be indoor lectures — 3/wk — and demonstration laboratories — 1 Hr/wk. — . The second half will have 1-2 lectures/wk and one 4 Hr. field trip/wk.
Prerequisite: Biology 211 or Biology 341-342 or 234 and/or permission of instructor. 3-5 Credits

Biol 632 Advanced Evolution
An inquiry into the modern synthetic theory of evolution with emphasis on population genetics, ecological genetics, evolution of dominance, genetic homeostasis, canalization and genetic theory of polymorphism.
Prerequisite: Permission of instructor
Hrs. by Arrangement 3 credits

Biol 638 Advanced Ecology
Concentration on important concepts of population and community ecology, topics covered include population dynamics, life history strategies, theory of R- and K- selection, competition, predation, community organization, and species diversity. Particular emphasis is placed on the relationship between theoretical and empirical ecology. A weekly tutorial will provide opportunity for greater discussion of material covered in lecture. Emphasis changes from year to year.
Prerequisite: Biology 341-342 or permission of instructor.
2 Lect Hrs. 1 Disc. Hr. 3 credits

Biol 642 Biogeography
A study of geographical distribution patterns in plants and animals. Includes historical and descriptive aspects of the distributions of organisms, experimental and comparative tests of island biogeography theory, the population genetics and evolutionary strategies of colonizing species. Lectures by instructor, one discussion session per week, independent research by students that will be presented to the class in seminar form.
Prerequisite: Biology 341-342 or equivalent, some knowledge of statistics and calculus highly recommended. 3 credits

Biol 643 Behavior Ecology of Seabirds
Adaptions of seabirds to the marine environment with particular reference to breeding biology and feeding strategies; other topics of current interest in behavioral ecology. Lectures or lecture and field work.
Prerequisite: Permission of instructor.
Hrs. by Arrangement 2-5 credits

Biol 644 Marine Botany
The systematics and ecology of marine plants, with emphasis on the algae. The current literature is employed to delineate unsolved problems.
Prerequisite: Biology 211-341 and Biology 241-242 and/or permission of instructor.
4 credits

Biol 645 Ecological and Evolutionary Aspects of Plant-Animal Interactions
Ecological and evolutionary aspects of plant-animal interactions. Coevolution of plants and animals will be examined in an ecological context. Interactions to be examined include pollination, seed predation, herbivory and grazing. The role of these interactions in the regulation of community structure will be discussed. Although emphasis will be on tropical communities, alpine, temperate, and desert communities will also be covered.
Prerequisite: Biology 341 or permission of instructor.
3 Lect. Hrs. 3 credits

Biol 646 Pollutants in Marine Food Chains
Examination in depth of the entry of selected pollutants into the oceans, their movements, distribution, and effects within marine organisms. Where possible, case studies from New England will be used.
Prerequisite: Organic Chemistry, physiology, ecology, and permission of instructor.
Hrs. by Arrangement 2 credits

Biol 650 Advanced Ethology
Examination in depth of topics in the biological study of behavior-Ethology with particular reference to communication and the evolution of social behavior. There will be lecture-discussions and lab exercises, also field trips. For graduate students and seniors with appropriate background in Biology 211 and 341, or Phychology 265, and consent of instructor.
2-6 credits

Biol 660 Seminar in Developmental Biology
Current problems in developmental biology, molecular and cellular differentiation, and pattern determination.
Prerequisite: Biology 211 and permission of instructor.
3 Sem-Disc. Hrs. 3 credits

Biol 662 Photobiology
The photochemical reactions that occur in biological systems. Major ionic areas are: 1. Properties of light energy 2. Utilization of light energy by photosynthetic organisms 3. Mechanism of visual transduction 4. Photochemical triggering mechanisms for developmental processes.
3 Lect. Hrs. 3 credits

Biol 666 Seminar in Neurobiology
Structure, function and development of sensory receptors. Neurons and muscles.
Prerequisite: Biology 211 and/or permission of instructor.
3 Lect. Hrs. 3 credits

Biol 668 Advanced Physiology
Experimental studies on two or three selected areas of organismal and cellular physiology will be conducted in depth each time the course is offered (probably spring term each year). Studies of sensory and nervous systems and of membrane transport will be the areas covered. Provisions will be made for independent projects during the course. One weekly seminar plus one weekly lab meeting. Open to graduate students and to qualified advanced undergraduates.
Prerequisite: Biology 216 or 372 or equivalent, Organic Chemistry; Physics, also permission of instructors.
1 Seminar Hr; 3-4 Lab Hrs. 3-4 credits

Biol 670 Tissue and Organ Culture
Methods of plant and animal tissue and organ culture will be presented with special emphasis on problems of differentiation and morphogenisis in vitro. Introduction of certain techniques now used in plant protoplast culture and for hybridization of somatic cells in plants and animals. Provisions will be made for independent projects during the course.
Prerequisite: Permission of instructor.
1 Lect. Hr., 6 Lab. Hrs. 3-4 credits

Biol 672-673 Directed Readings in Biology
Selected readings in advanced areas of biology with guidance and regular discussion.
Prerequisite: Permission of instructor. 1 credit

Biol 680 Methods in Comparative Biochemistry
Analysis of tissues and subcellular particulates from microorganisms, plants, invertebrate and vertebrate animals to reveal physiological differences and evolutionary trends as expressed by chemical differences. The use of chromatography, spectrophotometry, tracer methodology and chemical derivation for the analysis of tissues and organelles isolated by dissection and differential centrifugation. Techniques for cell disruption and sampling will be presented along with instruction in the operation of equipment for the separation, purification and identification of tissue constituents.
6 Lab. Hrs. 2 credits
9 Lab. Hrs. 3 credits

Biol 750 Seminar in Biology
A seminar to develop skills in library research and oral presentation. Each student will have a faculty advisor who will supervise his preparation for the seminars. All graduate students must take at least one semester of this course.
Hrs. by Arrangement 1 credit

Biol 770 Concepts in Modern Biology
A field of biology of current interest is examined in detail.
Prerequisite: Permission of instructor.
Hrs. by Arrangement 2-5 credits

Biol 900 Thesis Research
Substantial laboratory or field research resulting in a master's thesis. This course may not substitute for Biol 901 (these two courses are mutually exclusive). No more than 10 credits of this course may be applied to the Master's Degree. The credit may be applied over more than one semester.
Hrs. by Arrangement 10 credits

Biol 901 Projects in Biology
A substantial written report based on a library research or an original project such as curriculum design, design of teaching aids and exercises, critique of a book or theory, etc. Biology 900 and Biology 901 are mutually exclusive. No more than 6 credits of this course may be applied to the Master's Degree. The credit may be applied over more than one semester.
Hrs. by Arrangement 6 credits

Chemistry

Faculty

Joseph S. Alper, Ph.D. Yale University, *Theoretical Chemistry,* Jean-Pierre Anselme, Ph.D. Polytechnic Institute of Brooklyn, *Synthesis and Mechanisms of Organic Nitrogen Compounds,* Ernest I. Becker, Ph.D. Western Reserve University, *Organometallic Compounds Phytobiologically Important Compounds,* Robert L. Carter, Ph.D. University of Kansas, *Structural Studies of Inorganic Solids by Infrared and Raman Spectroscopy,* Robert I, Gelb, Ph.D. University of Wisconsin, *Chemistry of Electrode Processes and of Solution Equilibria,* Daniel A. Laufer, Ph.D. Brandeis University, *Synthesis and Properties of Biomolecules, Polymeric Reagents,* Thomas N. Margulis, Ph.D. University of California (Berkeley), *X-Ray Crystallography of Drugs and Natural Products,* Lowell M. Schwartz, Ph.D. Massachusetts Institute of Technology, *Physical Properties of Oxocarbons, Statistical Treatment of Data,* Hans van Willigen, Ph.D. University of Amsterdam, *Application of Spin Resonance in the Study of Structure and Dynamics,* Chi-Hua Wang, Ph.D. St. Louis University, *Chemistry of Free Radicals in Solution,* Walter E. Weibrecht, Ph.D. Cornell University, *Equilibrium Studies* of *Transamination of Silylamines,* Elliot M. Weinstock, Ph.D. Brown University, *Electronic Structure of Diatomic Molecules,* Leverett J. Zompa, Ph.D. Boston College, *Chemistry of Transition Metal Complexes.*

Admission Requirements

The Chemistry Department will recommend admission to the program for those applicants who present evidence of their ability to do graduate work with distinction. Such evidence normally will include: (1) a distinguished undergraduate transcript with at least an average of B or 3.0 in undergraduate Chemistry courses; (2) at least three encouraging and informed letters of recommendation. While not required, the submission of Graduate Record Examination Scores (aptitude and advanced tests) is highly recommended.

The Program and Facilities

A Master's Degree Program is offered which will serve graduate students with interest in chemical research as well as students with interests in some interdisciplinary, chemistry-related field. The degree requirements are flexible in order to allow a student to take as many as half of his graduate courses outside of chemistry and to enable him to submit a thesis in a tangential area. We envisage candidates working in such widely diverging fields as laboratory research, chemical economics, history of chemistry, biological chemistry, and chemical writing and editing. All candidates for the degree of Master of Science are required to take one graduate chemistry course in each of the three areas of Synthesis, Structure, and Dynamics. These courses, which cut across the traditional boundaries of Organic, Inorganic, Analytical and Physical Chemistry, are designed to give the students of diverse backgrounds and with diverse aims a

broad overview of the recent advances in chemistry. Three elective courses will allow the student to specialize in a field of his/her choice. Thus, for students aiming toward a research oriented Ph.D. degree, the option is available of taking a maximum number of chemistry courses and electing to work on a research project.

This flexible program is designed for recent graduates as well as people having positions in high schools, community colleges and industry who are seeking advancement by extending professional training. Attempts will be made to make scheduling arrangements for those who must study part-time.

The Department of Chemistry is housed in the spacious, air-conditioned Science Building of the Harbor Campus. Facilities include laboratory space for research of fifteen faculty, a science library, glassblowing, machine and electronic shops.

Research facilities presently available include:

- numerous uv, vis and ir spectrophotometers
- an ORD/CD and laser Raman spectrophotometer
- nuclear magnetic resonance and electron spin resonance equipment
- a fully equipped laboratory for X-ray crystallographic studies
- instruments for flash photolysis
- a tunable dye laser
- electroanalytical and radiochemistry equipment
- analytical and preparative gaschromatographs
- extensive computing facilities

Degree Requirements

The candidate is required:

1. To take six one-semester courses of which one is to be in each of the areas of Dynamics, Structure and Synthesis (3 credits per course). All students *must* successfully complete (B or better) CH 701, 711, 721 in order to become degree candidates.

2. To submit and defend an original contribution (thesis) in chemistry or in a chemistry related field (10 credits maximum).

3. To participate in a seminar program. This requirement includes the oral presentation of two (2) seminars.

The elective courses can be selected from course offerings of other Departments in the University subject to the approval of the Graduate Committee of the Department.

For graduation the candidate needs 30 graduate credits. Up to six credits of grade B or better may be transferred from other institutions subject to the approval of the Graduate Committee of the Department.

Chem 615 Topics in Physical Chemistry
Topical discussions, each based on elementary principles of physical chemistry and progressing toward recent development in the field. Open to graduate and advanced undergraduates.
Prerequisite: Chem 241 and 269, or equivalents
3 Lect. Hrs. 3 credits

Chem 655 Topics in Organic Chemistry
Topical discussions of selected topics of current interest in organic chemistry. Open to graduate and advanced undergraduates.
Prerequisite: Chem 154 or 156, or equivalents
3 Lect. Hrs. 3 credits

Chem 670 Topics in Inorganic Chemistry
Tropical discussion of selected topics of current interest in inorganic chemistry.
Open to graduate and advanced undergraduates.
Prerequisite: Chem 270, or equivalent
3 Lect. Hrs. 3 credits

Chem 701 Chemical Dynamics I
Discussions and outside readings in the areas of chemical and physical equilibria and rate processes. Emphasis on thermodynamics from classical and statistical points of view and on chemical reaction mechanisms.
Prerequisite: Acceptance into the Graduate Chemistry Program or permission of instructor.
Hrs. by Arrangement 3 credits

Chem 702 Chemical Dynamics II
Three or four selected topics of interest to students and staff involved. Typical subjects: molecular transport processes and the Kinetic Theory, photochemistry and excitation transfer processes, surface and electrode rate processes, particle collision dynamics and reactivity, irreversible thermodynamics, interaction of radiation and matter, and molecular state transitions.
Prerequisite: Acceptance into the Graduate Chemistry Program, or permission of instructor.
Hrs. by Arrangement 3 credits

Chem 711 Chemical Structure I
Structure determination and theory. Three or four molecules of interest to the students and faculty involved are chosen. Based on these molecules, discussions, readings and laboratory exercises attempt to show how a chemist determines each structure and how the structure is understood by modern chemical theory.
Prerequisite: Acceptance into the Graduate Chemistry Program, or permission of instructor.
Hrs. by Arrangement 3 credits

Chem 712 Chemical Structure II
In tutorial form. Individual students study advanced structure topics with appropriate staff members.
Prerequisite: Acceptance into the Graduate Chemisry Program, or permission of instructor.
Hrs. by Arrangement 3 credits

Chem 721 Chemical Synthesis I
The tactics and strategy of accomplishing the synthesis of a chemical substance. Examples of organic and inorganic systems.
Prerequisite: Acceptance into the Graduate Chemistry Program, or permission of instructor.
Hrs. by Arrangement 3 credits

Chem 722 Chemical Synthesis II
The synthesis and characterization of a number of representative organic and inorganic compounds.
Prerequisite: Acceptance into the Graduate Chemistry Program, or permission of instructor.
Hrs. by Arrangement 3 credits

Chem 900 Master's Thesis
10 Credits Maximum
Hrs. by Arrangement 1-10 credits

Chem 925 Seminar I
Prerequisite: Acceptance into the Graduate Chemistry Program, or permission of instructor.
Hrs. by Arrangement 1 credit

Chem 926 Seminar II
Prerequisite: Acceptance into the Graduate Chemistry Program, or permission of instructor.
Hrs. by Arrangement 1 credit

Faculty

Ann Berthoff, M.A. Radcliffe College, *17th Century Poetry, Teaching Methods, Literature Theory,* Joel Blair, Ph.D. Harvard University, *18th Century Literature, Satire,* Max Bluestone, Ph.D. Harvard University, *Elizabethan Drama, Shakespeare,* James Broderick, Ph.D. Harvard University, *19th Century Literature, Literary Criticism,* Josephine Bunselmeyer, Ph.D. Fordham University, *Shakespeare, Linguistics,* Robert Crossley, Ph.D. University of Virginia, *19th Century Prose, The Novel,* Linda Dittmar, Ph.D. Stanford University, *Modern Novel,* Albert Divver, Ph.D. University of Michigan, *19th Century Poetry, Poetics Linguistics,* Mary Anne Ferguson, Ph.D. Ohio State University, *Medieval Literature, Linguistics,* Philip Finkelpearl, Ph.D. Harvard University, *16th Century Literature, Shakespeare, Elizabethan Drama,* Edwin Gittleman, Ph.D. Columbia University, *Colonial and Romantic American Literature,* F. Russell Hart, Ph.D. Harvard University, *18th and 19th Century Literature, Teaching Methods,* Alan Helms, Ph.D. Rutgers University, *Modern Poetry,* Susan Horton, Ph.D. Brandeis University, *19th Century Literature, Stylistics,* Seymour Katz, Ph.D. Harvard University, *American Literature,* Richard Lyons, Ph.D. Princeton University, *Modern British and American Fiction, 19th Century Literature,* Emerson Marks, Ph.D. New York University, *19th Century Literature, Literary Criticism,* Monica McAlpine, Ph.D. University of Rochester, *Medieval Literature, Chaucer,* Duncan Nelson, Ph.D. Harvard University, *Composition,* Shaun O'Connell, Ph.D. University of Massachusetts, *Modern American Fiction, The Novel,* Alvan Ryan, Ph.D. University of Iowa, *Romantic and Victorian Literature,* Mary Shaner, Ph.D. University of Illinois, *Chaucer, Old English,* George Slover, Ph.D. Indiana University, *Theatre History, Elizabethan Drama,* George Smith, Ph.D. Univeristy of Virginia, *Milton,* Irvin Stock, Ph.D. Columbia University, *Modern Drama,* Taylor Stoehr, Ph.D. University of California at Berkeley, *American Literature,* Joseph Tribble, Ph.D. Harvard University, *American Literature,* Igor Webb, Ph.D. Stanford University, *19th Century Literature,* Frederick Willey, Ph.D. Harvard University, *The Novel, Literature Theory.*

Admission Requirements

The Committee will offer admission to the program to those applicants who present evidence of their ability to do graduate work with distinction. Such evidence will include: (1) a distinguished undergraduate transcript with, generally, at least an average of B or 3.0 in undergraduate English courses; (2) at least three encouraging and informed letters of recommendation from the applicant's undergraduate teachers (in English or related fields) or from others competent to comment on the applicant's academic qualifications; (3) a statement by the applicant (of 800 to 1200 words) of his major interests in the advanced study of English. While not required, the submission of Graduate record Examination Aptitude scores (Verbal and Mathematical) is highly recommended.

The Program

The English Department of the University of Massachusetts at Boston offers a coherent, self-contained program of studies leading to the Master of Arts Degree in English. As vitality and variety are the distinctive features of English studies, so too are these the distinctive features of the English M.A. Program at U.M.B. Thus course offerings reflect the range of approaches to literature: between English and American, among significant periods, between genres, and among major authors. Our purpose in offering such a program is to serve three groups of students: those who plan a career in secondary school teaching, those who plan to go on to earn a Ph.D., and those, without defined vocational goals, who seek to increase their understanding and enjoyment of English and American literature. While concerned to satisfy all these groups, the English M.A. at U.M.B. has been designed primarily to be of benefit to those whom the program serves in greatest number — those who plan careers in secondary school teaching. The program fulfills its special responsibility to this group through the patterned offering of a series of seminars — studies in particular genres, "The Teaching of Literature" and "The Teaching of Composition" — which, while constituting legitimate approaches to the study of English and American literature, also are of particular professional relevance to those who now teach or plan to teach in secondary schools. Taken together, the pattern of courses offered under the English M.A. Program serves all who, for whatever reason, are interested in gaining a greater command of English and American literature.

Degree Requirements

Requirements for the M.A. Degree in English include the satisfactory completion of six graduate-level courses (30 credits). The graduate student may enroll in two advanced undergraduate courses in English or related fields at the University of Massachusetts at Boston and substitute these two courses for one of the six graduate courses required for the degree. A student wishing to transfer credits earned elsewhere may petition for evaluation of such credits; up to six (6) transfer credits may be accepted. The degree candidate must earn at least a 3.0 (B) cumulative average in courses taken for graduate credit at the University of Massachusetts at Boston. The degree candidate may propose a semester's unit of independent study including writing which, if approved, may substitute for one required semester course. All graduate courses carry five credits.

A graduate student must demonstrate a reading knowledge of one foreign language, ancient or modern. The reading knowledge may be demonstrated either by achieving a score of 575 or better on the ETS Graduate School Foreign Language Test (GSFLT administered from Princeton, N.J.), or by earning an A or B in an advanced undergraduate foreign literature course (400 level) at the University of Massachusetts at Boston, or (by petition) in a course at an equivalent level elsewhere. Students who plan a career limited to

secondary-school teaching, and who have no intention of later proceding to the Ph.D. level, may petition for the waiver of the foreign language requirement. A waiver will also be granted to students whose command of an approved foreign language is so obvious as to make further examination of course requirement superfluous.

English 701 Image of America
An examination of the way in which America has responded to the concept of the new world and the image of self and nation that has evolved.

English 702 The Black Presence
Study of selected literary texts of the last two hundred years by major and minor authors who wrote with a special consciousness of the significance of Black people in American society.

English 703 Regional Literature
Regional consciousness in representative works of modern American writers of the South and New England; the roles that the sense of history, the sense of place, and the response to the natural world play in the work of Southern and New England writers.

English 704 Hawthorne and James
A study of the relationship between the fiction of Hawthorne and James, focusing on James's criticism of Hawthorne.

English 705 Contemporary American Fiction
A study of the scope (times and types) and strains (types and tensions) in the post WWII, post-Modern American novel, with special attention to the persistence of realism, the insistent presence of surrealism, and the occasional combination of the two.

English 706 Modern American Poetry
Studies in the poetry and selected prose of Robert Frost, E.A. Robinson, Robert Lowell, and Alan Tate, with complementary readings in other Modern American Poets.

English 707 Colonial American Literature
Study of literary works written in America before there was a politically independent American nation. Not only "representative" works, but also major texts with a significance which transcends the colonial period.

English 718 History of the English Language
Description and analysis of modern English from a linguistic perspective; attention to the relationship of linguistic analysis to literature. A survey of Old English, Middle English, early Modern and 18th century English, with its stress on traditional grammar.

English 719 Studies in Early English Drama
A study of the development of form — particularly the froms of comedy and tragedy — in the drama of Shakespeare's predecessors and contemporaries. Readings of selected mystery and morality plays and of works by such playwrights as Marlowe, Kyd, Marston, Tourneur, Webster, Greene, Dekker, Jonson, Beaumont and Fletcher. One play of each kind by Shakespeare.

English 720 Chaucer
A study of Chaucer's major works in Middle English. Special attention to such consideration as Chaucer's poetic development, his relations to his sources, medieval literary theory, and the social, political, and religious backgrounds.

English 721 Medieval to Renaissance Literature
A course in the transition from Medieval to Renaissance literature. A study of the transition in prose from homiletic writings and the romances through Elyot, Ascham, and Lyly; in lyric and narrative verse from Chaucer and the Scottish Chaucerians through Sidney; and in drama from the moralities and mystery plays through *Hamlet.*

English 723 Metaphysical Poetry
A survey of the major English poets called "metaphysical" in their historical context: Donne, Herbert, Vaughan, Crashaw, Marvell.

English 725 Milton
A study of the poetry and major prose with particular attention to *Paradise Lost;* Milton's style, his relations to traditional literary forms, his thematic concerns; an examination of Milton criticism.

English 730 The Rise of the Novel
A literary and historical study of early experiments in the shaping of the new genre of the novel. Samples, ranging from the late seventeenth century to the early nineteenth, include a variety of experimental forms.

English 733 Augustan Satire
Study of the major Augustan satirists — Dryden, Swift, and Pope — with attention paid to the works of Rochester, Addison, Gay, and Fielding; consideration of the critical questions arising from the study of satire.

English 741 Studies in Romanticism
The seminar will approach the unity of Romanticism through consideration of three important modes of British poetry, fiction, and criticism in the period from c. 1790 to c. 1832: the visionary (primarily Blake and Wordsworth), the picturesque (Scott and Byron), and the aesthetic (chiefly Keats), with related readings in the criticism of Hazlitt.

English 742 American Romanticism
A study of critical conceptions of American Romanticism. Readings will include examples of critical writing and fiction by Brown, Irving, Cooper, Poe, Simms, Hawthorne and Melville, and poetry by Bryant, Poe, Longfellow, Lowell, Emerson and Whitman.

English 746 Victorian Literature
Aestheticism and socialism in Victorian literature. The subject of the course is the development of two issues in the work of some major Victorian writers; the movement away from the classical view that art is normative to an increasing acceptance of the view that art is autotelic; and an accompanying movement away from a special concern with art to a concentration on social reform.

English 751 Modern Poetry
A study of the major figures and currents in modern British and American poetry.

English 752 Modern British Fiction — Lawrence and Woolf
A comparison of the major novels of D. H. Lawrence and Virginia Woolf with particular attention paid to the two writers' conceptions of the nature and function of the novel and to their relation to the literary contexts of the period, 1914-1940.

English 760 Studies in Poetry
Studies in the nature of poetry; an examination of modes. A reading of representative English and American poetry.

English 761 Studies in the Novel
Studies in the nature of prose fiction and the major kinds of novels. A reading of representative novels in English and American literature.

English 762 Studies in Drama
A study in English and American drama from an awareness of its European contexts. Plays discussed will come from the major periods of western drama and will provide examples of the major kinds of drama.

English 763 Studies in Satire
An exploration of individual works of satire and critical theories about the mode: pre-modern and modern selections from Swift, Pope, Shaw, Waugh, F. O'Connor, N. West, Eliot and others.

English 764 Nature of Narrative
This course explores a variety of ways in which modern and contemporary fiction, both English and European, departs from traditional narrative forms. While a comparative study of experimentation will be our main concern, we may address philosophical, political, and psychological issues as they affect narrative form in the twentieth century.

English 767 Shakespeare
Shakespeare's idea of dramatic art as revealed in explorations of one of the following topics — the plays and their sources, theatrical selfconsciousness, Shakespeare's language of the theater.

English 775 Stylistics
A study of the connection between linguistics and literature. An effort in turning linguistic information into strategies useful for interpreting novels, for describing how novels and poems get put together, for helping us learn how meaning gets made in a literary text, for talking about how a reader's responses to a text get generated out of the particular stylistic/linguistic choices a writer makes.

English 776 Studies in Criticism
Study of the nature and function of literature, the terms and methods of analysis and evaluation of literature, and the various approaches possible in the criticism of literature.

English 777 Teaching of Literature
Theories and practice of the teaching of literature, considered in the context of current models of the liberal arts college and of current issues in humanities curricula.

English 768 Arnold and Eliot
The study of two important men of letters who reflected and criticized the main artistic and intellectual currents of their time. Readings from their poetry, literary criticism, and social commentary as well as selected writings contemporary with each author.

English 771 Faulkner
A reading of all the major fiction centered in Yoknapatawpha County, with an intensive study of selected texts.

English 778 Problems in Modern Criticism
An introduction to some important modern critics: T.S. Eliot, I.A. Richards, Northrop Frye, Harold Bloom, Freud, D.H. Lawrence, Kenneth Burke, George Lukacs, Walter Benjamin, Sartre, Raymond Williams, and perhaps Blanchard, Blanchot or Derrida. The emphasis will be on some problems these critics face: defining their function, choosing a method, adopting an epistemology, setting formal aims. We will consider how the three "schools" these critics represent (the Aesthetic, the Synthetic, and the Radical) offer varying solutions to these problems.

English 786 Literature and Society — 19th Century England
A study of literature with special reference to its social and historical circumstances and of the theoretical questions raised by such a perspective. Authors to be studied include: Austen, Cobbett, Gaskell, Dickens, Engels, Charlotte Bronte, and Lawrence.

English 791 Teaching of Composition
The attempt will be to define the role of composition in the English curriculum in both college and secondary schools; to develop a philosophy of language as a foundation for a method of composing; to study psychological and linguistic aspects of the composing process.

English 792 Introduction to Linguistics
The course will, first, raise large questions behind the study of linguistics: What is the relationship between language and thought. Then, the course will survey the application of linguistics to the study of literature, the analysis and teaching of syntax and grammar, and the fields of psychology, sociology, and biology.

English 800 Independent Study
A comprehensive study of a particular area of literature, a particular author, etc. Consultation with the Director of Graduate Studies is mandatory. Applications or outlines of study must be submitted at the end of the semester previous to the study. Approval by graduate committee is required.

Faculty

Feroz Ahmad, Ph.D. University of London, *Middle Eastern History,* Hatim Amiji, M. A. Princeton University, *African History,* Edward Berkowitz, Ph.D. Northwestern University, *20th Century American History,* Paul Bookbinder, Ph.D. Brandeis University, *German History,* Frances L. Broderick, Ph.D. Harvard University, *American Social and Intellectual History Since 1865,* Thomas N.Brown, Ph.D. Harvard University, *20th Century American and Immigration History,* Alison W. Conner, Ph.D. Cornell University, *Chinese History,* Spencer DiScala, Ph.D. Columbia University, *Modern Italian History,* Paul Faler, Ph.D. University of Wisconsin, *American Labor and Social History,* Clive Foss, Ph.D. Harvard University, *Ancient History,* Paul A. Gagnon, Ph.D. Harvard University, *Contemporary French History,* Linda I. Gordon, Ph.D. Yale University, *Women's History,* Walter Grossman, Ph.D. Harvard University, *18th Century European History,* Robert E. Hannigan, M.A. Princeton University, *American Diplomatic History,* David Hunt, Ph.D. Harvard University, *French Revolution,* Esther Kingston-Mann, Ph.D. Johns Hopkins University, *Russian History,* Timothy McCarthy, Ph.D. Brandeis University, *European Intellectual History,* Frances Malino, Ph.D. Brandeis University, *Middle Eastern and Jewish History,* William A. Percy, Ph.D. Princeton University, *Medieval History,* Richard H. Powers, Ph.D. Ohio State University, *Modern European History,* Roger W. Prouty, Ph.D. Columbia University, *Modern Britain, British Empire and History of Boston,* Eric H. Robinson, M. A. Cambridge University, *Economic History and History of Technology,* Susan C. Schneider, Ph.D. University of Texas, *Latin American History,* Lester A. Segal, Ph.D. Columbia University, *Early Modern French and Jewish History,* Marshall S. Shatz, Ph.D. Columbia University, *Russian History,* Malcolm R. Smuts, Ph.D. Princeton University, *Tudor-Stuart England,* James Turner, Ph.D. Harvard University, *American Intellectual History,* Renee Watkins, Ph.D. Harvard University, *Renaissance and Reformation,* Sherrin Wyntjes, Ph.D. Tufts University, *Women's History and European History.*

Admission Requirements

Applicants must send to the Director of Graduate Studies evidence that they are able to perform graduate work at a high level of competence. This will include (1) the applicants' undergraduate records and those of any graduate work already completed; (2) letters of recommendation from teachers or others acquainted with their talents and professional achievements; (3) examples of their writing, either academic papers or special essays on a topic specified by the Graduate Committee; (4) Graduate Record Examination scores if available. Applicants will normally be expected to have maintained a 3.0 (B) cumulative average in history courses as undergraduates. Applications from persons who did not major in history as undergraduates will be considered but such persons, if admitted, will be expected to devise programs of reading and/or course work to remedy any deficiencies in their preparation for graduate study.

The Program

The Master of Arts Program in History offers a rigorous, individually-planned set of courses and supervised research and writing designed to serve several kinds of students: those who intend to pursue a Ph.D., those who seek to test their capacity for graduate work before choosing to pursue the doctorate, teachers (mainly at the secondary or two-year college level) who desire to improve their knowledge of the field, men and women who have been out of school and are eligible to return at the beginning graduate level, and those who wish to pursue advanced studies for their own intellectual enjoyment and development. Graduate enrollment is small; the graduate student is afforded close faculty attention and support.

Degree Requirements

Requirements for the Master of Arts Degree in History are 30 credit hours, including a graduate colloquium on historical methodology in students' major fields of interest; a research seminar; additional approved courses (two of which may be outside the Department), and the completion of a Master of Arts thesis. Students must also demonstrate a reading proficiency in one foreign language — French, German, or another judged relevant to each student's major area of interest. This requirement may be met by performing satisfactorily on the ETS Graduate School Foreign Language test, or by passing a test administered by the Department.

Students may choose to enroll in the program either full or part time. In normal circumstances it is expected that all requirements for the degree will be completed by full-time students within three years of each student's first enrollment and within four years by part time students in history.

Before candidates are approved for the Master of Arts degree, they must be examined in the fields of history in which their thesis fall by committees that will consist of three persons, at least two of whom must be members of the Department of History. Examining committees will be convened by the student's thesis director and will include the second reader as well as another member of the faculty appointed after consultations among the thesis director, the student, and the Director of Graduate Studies. To pass these examinations, students must receive at least two affirmative votes. If they fail, they may repeat the examination two times at intervals of not less than three months. If the examination has not been passed within two calendar years from the date upon which the examination was first taken, the student will be removed from degree candidacy, and will be readmitted only through a special petition to the Graduate Committee.

No grade of "C" awarded to a graduate student will count toward fulfilling the requirements for a Master of Arts Degree in History.

For a list of lecture and seminar courses which may be taken for graduate credit and which will include special readings, writing assignments and conference hours for graduate students, consult the Director of Graduate Studies, Department of History.

600-Level Courses (Open to Graduate and Undergraduate Students)

700-Level Courses (Open to Graduate Students Only)

The following assume some prior knowledge of the given area of history. All require graduate standing and permission of the instructor.

History 701 Topics in American History
Examinations of important themes in political and social, cultural and intellectual history of the United States.

History 702 Topics in European History
Examinations of important themes in political and social, cultural and intellectual history of the European Society.

800-Level Courses (Open to Graduate Students Only)

History 801 Graduate Colloquium
An advanced course in historical methodology. Topics to be covered will include historiography, the analysis of argument and evidence, recent developments in historical methods. Required of graduate students.

History 810 Graduate Research Seminar: U.S. (Spring Term only)
An advanced course in historical research, to be taken after the Graduate Colloquium. Readings and research will draw upon diverse historical materials, primary sources, records, documents in American history, and will focus upon topics to be announced in advance.

History 811 Graduate Research Seminar: Europe (Spring Term only)
Advanced course in historical research, to be taken after the Graduate Colloquium. Readings and research will draw upon historical materials in European history, and will concern topics to be announced in advance.

History 850 Independent Study
Advanced course of independent readings under the guidance, and subject to the examination, of the instructor. Areas and topics according to student need.

History 900 Master of Arts Thesis
Under the supervision of the appointed advisor. All topics must be previously approved by the Department's Graduate Committee. The thesis will be judged for its suitability as partial fulfillment of the requirements for a Master of Arts degree by both the appointed advisor and a second reader selected in consultation with the Director of Graduate Studies.

Faculty

Bernice Auslander, Ph.D. University of Michigan, *Commutative Ring Theory,* Alfonso Azpeitia, Ph.D. University of Madrid, *Complex Analysis and Mathematical Programming,* Ethan Bolker, Ph.D. Harvard University, *Combinatorial Analysis,* James Byrnes, Ph.D. Yeshiva University, *Analysis,* Daniel Comenetz, Ph.D. Brandeis University, *Algebraic Geometry,* Ernest Elyash, Ph.D Cornell University, *Probability,* Colin Godfrey, Ph.D. Harvard University, *Algebra,* Mathew Gaffney, Ph.D. University of Chicago, *Differential Geometry,* Guy Hogan, Ph.D. Ohio State University, *Group Theory,* Herbert Kamowitz, Ph.D. Brown University, *Functional Analysis,* Joan Lukas, Ph.D. Massachusetts Institute of Technology, *Theory of Computations and Mathematical Logic,* Jack Lutts, Ph.D. University of Pennsylvania, *Topology and History of Mathematics,* Victor Miller, Ph.D. Harvard University, *Number Theory and Computer Mathematics,* Some Nath Mukherjee, Ph.D. B. H. University (India), *Functional Analysis and Transform Calculus,* Elizabeth O'Neil, Ph.D. Harvard University, *Applied Mathematics,* Stephen Parrott, Ph.D. University of Michigan, *Functional Analysis,* James Perchik Ph.D. Harvard University, *Topology and Computer Mathematics,* Geza Schay, Ph.D. Princeton University, *Probability,* Robert Seeley, Ph.D. Massachusetts Institute of Technology, *Partial Differential Equations,* Taffee Tanimoto, Ph.D. University of Pittsburgh, *Geometry,* Michael Tomlinson, Ph.D. University of Oregon, *Functional Analysis,* Dennis Wortman, Ph.D. Massachusetts Institute of Technology, *Functional Analysis.*

Admission Requirements

At least 18 semester credit hours in undergraduate mathematics beyond the content of Differential and Integral Calculus are normally required of each candidate entering the Master's program. A one-year course in Advanced Calculus and a one-year course in Linear Algebra are desirable.

The Program

The University of Massachusetts at Boston provides low-cost, high-quality post-graduate training in mathematics for a wide variety of students, full-time and part-time.

While the program offers the opportunity for advancement in mathematical knowledge to all qualified students, it has three major objectives:

a) to prepare students for graduate work in pure mathematics at the doctoral level.

b) to provide the professional qualifications needed for teaching mathematics up to the two-year college level. In this connection, the opportunity is available for students to combine graduate courses in mathematics with the existing Teacher Certification Program.

c) to offer the opportunity for professional advancement to teachers already in service.

In order to maximize the accessibility of the program all graduate courses are scheduled in the late afternoon and evening.

Degree Requirements
To earn a Master's Degree in Mathematics, a student must:

1. Pass ten courses (30 credits) at least six of which must be numbered 700 or above, and which must include the courses 711 (Modern Algebra I), 721 (Complex Variable I), 723 (Real Variable I), and 725 (Topology I) or their equivalent. Math 701 (Advanced Linear Algebra) or its equivalent will be a requirement for students having less than one year of Linear Algebra. No more than three of the ten courses counted toward the Master's Degree may be taken outside the department. They must be graduate courses and two must be related to Mathematics. With the approval of the department, three credits, substituting for one of the elective courses, may be earned by participating in a Graduate Seminar which will involve independent reading and expository work both oral and written.

2. Pass the Master's Written Qualifying Exam. This exam consists of two parts, each of which lasts two hours; one part covering algebra and topology, and the other, analysis. Knowledge of the material through the level of 711, 721, 723, and 725 should be sufficient to enable the student to pass the exam.

Math 701 Advanced Linear Algebra
Linear and multi-linear algebra. Linear transformations. Spectral theory. Canonical forms. Dual spaces. Tensor products. Exterior algebra.

Math 711, 712 Introduction to Modern Algebra I and II
Groups, rings, algebras, fields, modules. Tensor products. Homological algebra.
Prerequisite: Math 351 or equivalent.

Math 721, 722 Theory of Functions of a Complex Variable I and II
Linear transformations of a complex variable. Power series and elementary functions. Holomorphic functions and Cauchy's Theorem. Theory of residues. Isolated singularities. Conformal mappings. Entire and meromorphic functions and their representations by means of products and partial fractions. Elliptic functions. Analytic continuation and Riemann surfaces. Algebraic functions.
Prerequisite: Math 351 or equivalent.

Math 723, 724 Theory of Functions of a Real Variable I and II
The real number system, Lebesgue measure and the Lebesgue integral. Differentiation. The classical Banach Spaces, general measure, and integration theory.
Prerequisite: Math 351 or equivalent.

Math 725, 726 Topology I and II
Topological spaces, classification, separation properties, cartesian products, mappings and continuity, connectedness, general convergence, compactness, function spaces. Introduction to homotopy theory. Algebraic topology.

Math 727, 728 Differentiable Manifolds I and II
Topics to be selected from:
Differentiable manifolds, tangent spaces, tangent bundles, flows and vector fields. Lie derivatives, differential forms, generalizations of line and surface integrals. Divergence theorem and Stokes' theorem. Riemannian manifolds, Riemann surfaces. Relationships to vector analysis and to differential geometry.

Math 729 Stochastic Processes I
Probability spaces, measures, random variables. Various modes of convergence, laws of large numbers and of the iterated algorithm. Central limit theorem, conditioning, martingales.

Math 730 Stochastic Process II
Processes with independent increments. Markov chains, stationary processes, continuous parameter Markov chains, diffusion processes, sample paths, separability, semigroups, boundaries.
Prerequisite: Math 729 or permission of instructor.

Math 731 Partial Differential Equations I
Hamilton-Jacobi Theory for equations of first order, distributions, Fourier integrals of distributions, Sobolev spaces of distributions.

Math 732 Partial Differential Equations II
Elliptic equations, Garding's inequality, smoothness of solutions, solutions of the Dirichlet problem, hyperbolic equations, the Cauchy problem.
Prerequisite: Math 731 or permission of instructor.

Math 789, 790 Special Topics I and II

University of Massachusetts at Boston
Harbor Campus
Boston, Massachusetts 02125

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